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## PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

SJO920000199US1

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on December 20, 2005

Signature Patricia Beilmann

Typed or printed name Patricia Beilmann

Application Number

09/900,688

Filed

July 6, 2001

First Named Inventor

Mustafa Pinarbasi

Art Unit

2653

Examiner

Magee, Christopher R.

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest.  
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.  
(Form PTO/SB/96)

☒ attorney or agent of record. 28,852  
Registration number

☐ attorney or agent acting under 37 CFR 1.34.  
Registration number if acting under 37 CFR 1.34

Robert O. Guillot  
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Telephone number

December 20, 2005

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☒ \*Total of 1 forms are submitted.

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### EXTENSION OF TIME REQUEST

Applicant has previously paid for a first month extension of time for a large entity; applicant therefore now requests the second and third additional months extension of time in the sum of \$900, and the fee therefore is to be charged to applicant's deposit account 08-3240.

### PRE-APPEAL BRIEF REQUEST FOR REVIEW

Applicant requests review of the rejection set forth in the Advisory Action, which states:

The basic issue is that Applicant's invention is directed to a magnetic head spin valve sensor having an antiferromagnetic PtMn layer which is fabricated upon a seed layer. The seed layer is comprised of three sublayers;  $\text{Al}_2\text{O}_3$ , NiMnO and NiFeCr. The PtMn layer is deposited upon the NiFeCr seed layer. Applicant has discovered that a significant improvement in device performance is obtained where the NiFeCr seed layer is first deposited, and thereafter the top surface of the deposited NiFeCr seed layer is etched back. This creates a top crystallographic surface of the NiFeCr seed layer that is "rougher than a top crystallographic surface of a deposited NiFeCr seed layer", as claimed.

The prior art relied upon, Shukh teaches only a deposited NiFeCr seed layer between a ferromagnetic layer and a spacer, layer and Skukh indicates that it is desirable to have some degree of roughness at the interface between the ferromagnetic layer and the spacer layer. Shukh teaches only a deposited seed layer and does not teach a device including a seed layer having a top crystallographic surface that is "rougher than a top crystallographic surface of a deposited NiFeCr seed layer" (as claimed).

Claim 1 is illustrative of Applicant's invention, it states:

1. (previously presented): A method for fabricating a magnetic head including a spin valve sensor, comprising the steps of:
  - fabricating a first electrical insulation layer (G1)
  - above a first magnetic shield layer (S1);
  - fabricating a plurality of spin valve sensor layers
  - above said G1 layer, said spin valve sensor layers including a seed layer, a PtMn antiferromagnetic layer, at least one pinned magnetic layer and at least one free magnetic layer;

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wherein said seed layer is a three part seed layer comprised of  $\text{Al}_2\text{O}_3$ ,  $\text{NiMnO}$  and  $\text{NiFeCr}$ , and wherein said  $\text{NiFeCr}$  seed layer has a rough top crystallographic surface that is rougher than a top crystallographic surface of a deposited  $\text{NiFeCr}$  seed layer. Emphasis added.

The specific rejection in the Office Action states:

“The Examiner maintains that Shukh (US 6,667,616 B1) teaches a seed layer [74] made of Ta,  $\text{NiFeCr}$ , Ru or CrV, which has a purpose to optimize a texture, grain size, and morphology of the subsequent layers. Further Shukh teaches it is desirable to have a certain degree of roughness at the interface between ferromagnetic magnetic layer [80] and spacer [78] and between ferromagnetic layer [76] and spacer [78] (col. 4, lines 15-23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the  $\text{NiFeCr}$  seed layer of Gill ‘616 with a rough crystallographic surface as taught by Shukh.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to provide the  $\text{NiFeCr}$  seed layer of Gill ‘616 with a rough crystallographic surface as taught by Shukh in order to facilitate transfer of electrons to subsequent layers where spin dependent scattering occurs (Shukh, col. 4, lines 25-26). References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. In re Bozek, 163 USPQ 545 (CCPA 1969). In this case, Shukh teaches it is desirable to have a certain degree of roughness at a surface interface.”

Applicant agrees that “Shukh teaches it is desirable to have a certain degree of roughness at a surface interface.” However, Shukh teaches that a deposited  $\text{NiFeCr}$  seed layer for the ferromagnetic layer can accomplish this.

The rejection implies that one skilled in the art would be motivated by Shukh’s teachings to experiment with deposited seed layers at various locations throughout a spin valve sensor in a search for improved performance. In a magnetic head such seed layers might include a magnetic shield seed layer, an antiferromagnetic layer seed layer, a pinned magnetic layer seed layer, a spacer layer seed layer, a free magnetic layer seed layer, a magnetic biasing layer seed layer, and/or a cap layer seed layer, just to mention a few possibilities. Applicant therefore suggests that it is only through use of improper hindsight that the rejection is created. There is no teaching or suggestion with either Shukh or the other cited prior art for the combination of Shukh teaching with the other prior art to render obvious Applicant’s claimed invention.

Furthermore, Shukh teaches the use of a deposited seed layer (and thus a top crystallographic surface of a deposited seed layer), where the claims require a surface that is “rougher than a top crystallographic surface of a deposited NiFeCr seed layer.” Shukh teaches nothing and suggests nothing with regard to the advantages that might be obtained for such a “rougher than” a deposited seed layer top crystallographic surface, and particularly nothing where the rougher than a deposited NiFeCr seed layer is one that is disposed on top of a NiMnO layer that is on top of an Al<sub>2</sub>O<sub>3</sub> layer, and beneath an antiferromagnetic PtMn layer, as claimed.

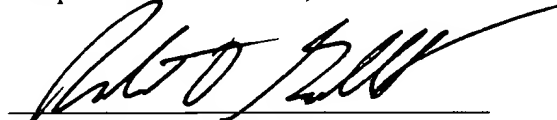
Applicant submits that while Shukh may teach that it is desirable to have a certain degree of roughness at a surface interface, it neither teaches nor renders obvious Applicant’s claimed NiFeCr seed layer for an antiferromagnetic PtMn layer that has a top crystallographic surface which is rougher than that of a deposited seed layer, as claimed.

Further independent claims 18, 23, 31 and 36 include the limitation that the NiFeCr seed layer has a top crystallographic surface that is rougher than the top crystallographic surface of a deposited NiFeCr seed layer; Applicant therefore urges that these independent claims are likewise allowable. Regarding dependent claims 2-6, 19-22, 24-30, 32-35 and 37-43, they are urged to be allowable as having further non-obvious limitations as have been previously argued in the file history or alternatively as being dependent either directly or indirectly from an allowable base claim.

Applicant therefore requests review of this rejection.

Dated: December 20, 2005

Respectfully submitted,



ROBERT O. GUILLOT

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